REMARKS

This Amendment is being filed in response to the Office Action dated August 19, 2008. Claims 1-22 and 45-48 are currently pending, of which claims 1, 9, 16, 45 and 46 are independent. Claims 23-44 were previously canceled.

Claims 9 has been amended.

I. Summary of Claim Rejections

In the Office Action:

1) claims 1-22 and 45-48 were rejected under 35 U.S.C. § 101;

2) claim 45 was rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement;

3) claim 45 was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicants regard as the invention;

4) claims 1-22 and 45-48 were rejected under 35 U.S.C. § 102(a) as being anticipated by Sauro et al., "Next Generation Simulation Tools: The Systems Biology Workbench and BioSPICE Integration," Journal of Integrative Biology, vol. 7, No. 4, 2003, p. 353-370 (hereinafter "Sauro");

5) claims 1-5, 8-11, 14-17, 20-22, 45 and 48 were rejected under 35 U.S.C. § 102(b) as being anticipated by Hucka et al., "The Erato Systems Biology Workbench: Enabling Interaction and Exchange Between Software Tools for Computational Biology," Pacific Symposium on Biocomputing, vol. 7, 2002, p. 450-461 (hereinafter "Hucka");

6) claims 1-22 and 45-48 were provisionally rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1-19, 26 and 64 of co-pending Application No. 10/783,628; and

7) claims 1-22 and 45-48 were provisionally rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1-19, 32 and 38-39 of co-pending Application No. 10/783,552.

II. 35 U.S.C. § 101 Rejection

In the Office Action, claims 1-22 and 45-48 were rejected under 35 U.S.C. § 101 for failing to "include a final resulting step of a physical transformation, or produce a useful, concrete, and tangible result" (Office Action, page 2). Applicants respectfully traverse the rejection.

Applicants respectfully urge that claim 1 is directed to a system with a storage and a processor, i.e., a machine, which Applicants respectfully urge is statutory subject matter.

Applicants respectfully urge that claim 16 is directed to an article of manufacture, which Applicants respective urge is statutory subject matter.

Claims 1, 9, 16, 45 and 46 transform "an article into a different state or thing" and "the transformation [is] central to the purpose of the claimed process." See *In re Bilski*, No. 2007-1130, p. 24 (Fed. Cir. Oct. 30, 2008). For example, in claim 9, a biological system is transformed into a graphical model. In addition, in claim 9, the graphical model of the biological system is transformed into a system that generates dynamic behavior of the modeled biological system. Claims 1, 16, 45 and 46 include similar transformations of articles into different states or things. Therefore, Applicants respectfully urge that claims 1, 9, 16, 45 and 46 are statutory subject matter.

In addition, claim 9 includes "constructing, using a computing device, a graphical model of the biological system..." and "generating, using the computing device, dynamic behavior of the modeled biological system..." Since claim 9 employs one of the other statutory categories, Applicants respectfully urge that claim 9 is statutory subject matter. See *Ex parte Wasynczuk*, Appeal No. 2008-1496, p. 22 (B.P.A.I. June 2, 2008) (informative opinion).

Claims 2-28 depend from and incorporate all of the features of claim 1. Thus, claims 2-28 are patentable for at least the same reasons as set forth above for claim 1. Claims 10-15 and

48 depend from and incorporate all of the features of claim 9. Thus, claims 10-15 and 48 are patentable for at least the reasons set forth above for claim 9. Claims 17-22 depend from and incorporate all of the features of claim 16. Thus, claims 17-22 are patentable for at least the reasons set forth above for claim 16. Claim 47 depends from and incorporates all of the features of claim 46. Thus, claim 47 is patentable for at least the reasons set forth above for claim 46.

Accordingly, Applicants respectfully urge the Examiner to reconsider and to withdraw the above 35 U.S.C. § 101 rejection of claims 1-22 and 45-48.

III. 35 U.S.C. § 112 Rejections

Claim 45 was rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Examiner alleges that claim 45 includes various "means for" clauses but "no specific [computer, apparatus, system] structures for performing these means are disclosed" (Office Action, page 6). Applicants respectfully disagree.

In addition, claim 45 was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicants regard as the invention. The Examiner alleges that claim 45 includes various "means for" clauses but the "specification as filed does not set forth specific structures for performing the means recited" (Office Action, page 7). Applicants respectfully disagree, and traverse the rejections below.

Structure for "constructing a graphical model of the biological system," as included in claim 45, is discussed in the Specification, at least on page 9, line 8 to page 12, line 8.

Structure for "generating dynamic behavior of the modeled biological system," as included in claim 45, is discussed in the Specification, at least on page 31, line 30-page 33, line 23.

Structure for "storing the dynamic behavior of the modeled biological system in a storage" is discussed in the Specification, at least on page 33, line 24-page 34, line 11.

For at least the reasons set forth above, Applicants respectfully urge the Examiner to reconsider and to withdraw the above 35 U.S.C. § 112, first paragraph, and 35 U.S.C. § 112, second paragraph, rejections of claim 45.

IV. 35 U.S.C. § 102 Rejections

A. Rejections under Sauro et al.

Claims 1-22 and 45-48 were rejected under 35 U.S.C. § 102(a) as being anticipated by Sauro. Applicants respectfully traverse the rejection.

Applicants respectfully urge that Sauro fails to disclose or suggest at least the following feature of claim 1: "generate as output dynamic behavior of the biological system using a first type of computational model for the first chemical reaction, a second type of computational model for the second chemical reaction, and the specified constraint."

In Applicants' June 9, 2008 response, Applicants respectfully urged that "[t]here is no disclosure in Sauro of using different types of computational models for different chemical reactions in a single model" (Applicants' 6/9/08 response, page 11) (emphasis added). In response, the Examiner alleges that Sauro discloses that "Jarnac ... [can] run each of the [multiple] models simultaneously through the SBW interface" (Office Action, page 12-page 13).

Applicants respectfully urge that being able to run multiple models "simultaneously" (i.e. concurrently) is not equivalent to running a single model that includes a first chemical reaction and a second chemical reaction, where the first chemical reaction is modeled using a first type of computational model and the second chemical reaction is modeled using a second type of computational model that is different from the first type of computational model because the latter requires a simulation engine that can handle interactions between models of different computational types.

Sauro states that Jarnac can "simulate either continuous (ordinary differential equation based), or probabilistic (based on the Gillespie method) models" (Sauro, page 364, ¶ 3) (emphasis added). Thus, Sauro discloses that Jarnac can only simulate models that have one computational type. Accordingly, Sauro does not disclose or suggest the ability to "generate as

output dynamic behavior of the biological system using a first type of computational model for the first chemical reaction, a second type of computational model for the second chemical reaction, and the specified constraint," as included in claim 1.

Claim 9 includes "generating, using the computing device, dynamic behavior of the modeled biological system using a first type of computational model for the first chemical reaction, a second type of computational model for the second chemical reaction and the specified constraint." Claim 16 includes "generating, using the constructed graphical model of the biological system, dynamic behavior of the modeled biological system using a first type of computational model for the first chemical reaction, a second type of computational model for the second chemical reaction, and the specified constraint." Claim 45 includes "means for generating dynamic behavior of the modeled biological system using a first type of computational model for the first chemical reaction, a second type of computational model for the second chemical reaction, and the specified constraint." Claim 46 includes "executing one of the first chemical reaction and the second chemical reaction identified by a first reaction, the first chemical reaction being executed using a first type of computational model concurrently with the second chemical reaction being executed using a second type of computational model." Sauro does not disclose or suggest these features for the reasons set forth above for claim 1.

Claims 2-28 depend from and incorporate all of the features of claim 1. Thus, claims 2-28 are patentable for at least the same reasons as set forth above for claim 1. Claims 10-15 and 48 depend from and incorporate all of the features of claim 9. Thus, claims 10-15 and 48 are patentable for at least the reasons set forth above for claim 9. Claims 17-22 depend from and incorporate all of the features of claim 16. Thus, claims 17-22 are patentable for at least the reasons set forth above for claim 16. Claim 47 depends from and incorporates all of the features of claim 46. Thus, claim 47 is patentable for at least the reasons set forth above for claim 46.

Accordingly, Applicants respectfully urge the Examiner to reconsider and to withdraw the above 35 U.S.C. § 102(a) rejection under Sauro of claims 1-22 and 45-48.

B. Rejections under Hucka et al.

Claims 1-5, 8-11, 14-17, 20-22, 45 and 48 were rejected under 35 U.S.C. § 102(b) as being anticipated by Hucka. Applicants respectfully traverse the rejection.

Applicants respectfully urge that Hucka fails to disclose or suggest at least the following feature of claim 1: "generate as output dynamic behavior of the biological system using a first type of computational model for the first chemical reaction, a second type of computational model for the second chemical reaction, and the specified constraint."

In Applicants' June 9, 2008 response, Applicants respectfully urged that "[t]here is no disclosure in Hucka of using different types of computational models for different chemical reactions in a single model" (Applicants' 6/9/08 response, page 17) (emphasis added). In response, the Examiner alleges that Hucka discloses that "the user interface working analogously to Jarnac, may run the one or more loaded models created in JDesigner, wherein the models may each comprise one or more chemical reactions along with edited parameters or variables" (Office Action, page 16).

Applicants respectfully urge that Jarnac being able to run "one or more loaded models created in JDesigner" is not equivalent to running a single model that includes a first chemical reaction and a second chemical reaction, where the first chemical reaction is modeled using a first type of computational model and the second chemical reaction is modeled using a second type of computational model that is different from the first type of computational model because the latter requires a simulation engine that can handle interactions between models of different computational types.

Hucka states that its system may use either the Gillespie Stochastic Simulator, the Gibson Stochastic Simulator, or the Jarnac Simulator (Hucka, page 459). Applicants respectfully urge that Hucka does not disclose or suggest that its system uses multiple simulators that simulate different computational model types to execute a single model or uses a simulator that supports multiple computational model types. Instead, the Gillespie and Gibson simulators support stochastic models, whereas the Jarnac simulator supports ODE-based models. Accordingly, Hucka does not disclose or suggest the ability to "generate as output dynamic behavior of the biological system using a first type of computational model for the first chemical reaction, a second type of computational model for the second chemical reaction, and the specified constraint," as included in claim 1.

Claim 9 includes "generating, using the computing device, dynamic behavior of the modeled biological system using a first type of computational model for the first chemical reaction, a second type of computational model for the second chemical reaction and the specified constraint." Claim 16 includes "generating, using the constructed graphical model of the biological system, dynamic behavior of the modeled biological system using a first type of computational model for the first chemical reaction, a second type of computational model for the second chemical reaction, and the specified constraint." Claim 45 includes "means for generating dynamic behavior of the modeled biological system using a first type of computational model for the first chemical reaction, a second type of computational model for the second chemical reaction, and the specified constraint." Claim 46 includes "executing one of the first chemical reaction and the second chemical reaction identified by a first reaction, the first chemical reaction being executed using a first type of computational model concurrently with the second chemical reaction being executed using a second type of computational model." Hucka does not disclose or suggest these features for the reasons set forth above for claim 1.

Claims 2-28 depend from and incorporate all of the features of claim 1. Thus, claims 2-28 are patentable for at least the same reasons as set forth above for claim 1. Claims 10-15 and 48 depend from and incorporate all of the features of claim 9. Thus, claims 10-15 and 48 are patentable for at least the reasons set forth above for claim 9. Claims 17-22 depend from and incorporate all of the features of claim 16. Thus, claims 17-22 are patentable for at least the reasons set forth above for claim 16. Claim 47 depends from and incorporates all of the features of claim 46. Thus, claim 47 is patentable for at least the reasons set forth above for claim 46.

Accordingly, Applicants respectfully urge the Examiner to reconsider and to withdraw the above 35 U.S.C. § 102(a) rejection under Hucka of claims 1-22 and 45-48.

V. Double Patenting Rejections

In the Office Action, the Examiner has provisionally rejected claims 1-22 and 45-48 on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1-19, 26 and 64 of co-pending United States Patent Application Number 10/783,628 (Attorney Docket No. MWS-108). (Office Action, page 17). Since the rejection is provisional,

Applicants will submit a terminal disclaimer, if necessary, when the pending claims are deemed allowable.

In the Office Action, the Examiner has further provisionally rejected claims 1-22 and 45-48 on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1-19, 32 and 38-39 of co-pending United States Patent Application Number 10/783,552 (Attorney Docket No. MWS-109). (Office Action, page 18). Since the rejection is provisional, Applicants will submit a terminal disclaimer, if necessary, when the pending claims are deemed allowable.

CONCLUSION

In view of the above amendments and arguments, Applicant believes the pending application is in condition for allowance. Should the Examiner feel that a teleconference would expedite the prosecution of this application, the Examiner is urged to contact the Applicants' attorney at (617) 227-7400.

Please charge any shortage or credit any overpayment of fees to our Deposit Account No. 12-0080, under Order No. MWS-110RCE. In the event that a petition for an extension of time is required to be submitted herewith, and the requisite petition does not accompany this response, the undersigned hereby petitions under 37 C.F.R. §1.136(a) for an extension of time for as many months as are required to render this submission timely. Any fee due is authorized to be charged to the aforementioned Deposit Account.

Dated: November 19, 2008

Respectfully submitted,

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